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VII. *A Collection of Observations communicated to the Royal Society, relating to the COMET that appear'd in the Months of January, February, and March 1736-7.*

- I. *Observations upon the Comet that appear'd in the Months of January, February and March 1737, made at Oxford, by J. Bradley, F. R. S. Sav. Prof. Astron.*

I Made several Observations on the late Comet, during the last five Weeks of its Appearance, which enabled me to find out the Elements of a parabolic Trajectory, upon which a *Calculus* might be founded, that would correspond with each of my Observations within about a Minute of a Degree: But the first of them being taken many Days after the Time of the *Perihelion*, and the whole Series comprehending but a very small Portion of the Trajectory; I was sensible, that a little Error, either in the Observations themselves, or in the Places of the Fixt Stars with which the Comet was compared, might occasion a considerable Difference in the Situation and Magnitude, &c. of the Orbit deduced from them alone; and therefore I was desirous of having some earlier and accurate Observations, in order to determine those Elements with more Certainty: But not having yet been able to procure such, I shall not longer defer laying before the Society the Particulars of my own, together with the Comparison between the observed
Places.

Places of the Comet, and those computed from such Elements as I have already collected from my own Observations.

I first saw the Comet on the 15th of *February* 1737, between Six and Seven in the Evening, when its *Nucleus* appear'd small and indistinct, and its Tail (extending above a Degree from the Body) pointed towards the Star in *Lino Austral. Piscium*, marked ξ by *Bayer*. Applying my Micrometer to a good seven Foot Tube, I observed, that at 7 Hours, 32 Minutes *Temp. Æquat.* the Comet preceded the said Star 1 Degree, 1 Minute, 40 Seconds, in Right Ascension, and was 20 Minutes, 20 Seconds more Southerly than the Star. *Note*, That the equal Time is likewise made use of in all the following Observations.

Assuming the Place of this Star, as it is settled in the *British Catalogue*, (as I shall likewise the Places of others hereafter mentioned) it follows, that the Comet's Right Ascension was 23 Degrees, 58 Minutes, 0 Seconds, and its Declination 1 Degree, 31 Minutes, 55 Seconds, North.

February 17. 7 Hours, 33 Min. the Comet followed *as in Nodo Lin. Piscium* 31 Min. 25 Sec. in Right Ascension, and was 52 Min. 30 Sec. more Northerly. Hence the Comet's Right Ascension was 27 Deg. 38 Min. 20 Sec. and its Declination 2 Deg. 21 Min. 10 Sec. North.

February 18. 7 Ho. 14 Min. a small Star (whose Right Ascension was afterwards found to be 29 Deg. 0 Min. 5 Sec. and Declination 2 Deg. 58 Min. 30 Sec. North) preceded the Comet 24 Min. 0 Sec. in Right Ascension, and was 15 Min. 30 Sec. more Northerly. Hence the Comet's Right Ascension was 29 Deg.

24 Min. 5 Sec. and its Declination 2 Deg. 34 Min. 0 Sec. North.

February 21. 7 Ho. 25 Min. the Comet preceded ν Ceti 1 Deg. 6 Min. 0 Sec. in Right Ascension, and was 38 Min. 20 Sec. more Southerly. Hence its Right Ascension was 34 Deg. 25 Min. 10 Sec. and its Declination 3 Deg. 47 Min. 20 Sec. North.

February 22. 7 Ho. 45 Min. the Comet followed ν Ceti 30 Min. 5 Sec. in Right Ascension, and was 18 Min. 45 Sec. more Southerly. Hence the Comet's Right Ascension was 36 Deg. 1 Min. 15 Sec. and its Declination 4 Deg. 6 Min. 55 Sec. North.

February 25. 7 Ho. 45 Min. a small Star (whose Right Ascension was afterwards found to be 40 Deg. 34 Min. 0 Sec. and Declination 5 Deg. 5 Min. 30 Sec. North) followed the Comet 2 Min. 30 Sec. in Right Ascension, and was 2 Min. 30 Sec. more Northerly than the Comet. Hence the Comet's Right Ascension was 40 Deg. 31 Min. 30 Sec. and its Declination 5 Deg. 3 Min. 0 Sec. North.

The Difference of Right Ascension and Declination between this Star and the Comet was taken with a 15 Foot Telescope; but the Place of the Star was determined by one Observation made with the 7 Foot Tube.

February 27. 8 Ho. 45 Min. the Comet preceded a small Star 1 Deg. 16 Min. 0 Sec. in Right Ascension, and was 2 Min. 15 Sec. more Southerly. The Right Ascension of this Star was afterwards (by a single Observation) found to be 44 Deg. 37 Min. 40 Sec. and its Declination 5 Deg. 38 Min. 30 Sec. North. Hence the Comet's Right Ascension was 43 Deg. 21 Min.

40 Sec. and its Declination 5 Deg. 36 Min. 15 Sec. North.

March 4. 8 Ho. 0 Min. a small Star (whose Right Ascension was found to be 49 Deg. 30 Min. 30 Sec. and its Declination 6 Deg. 38 Min. 30 Sec. North) preceded the Comet 7 Min. 30 Sec. in Right Ascension, and was 10 Min. 0 Sec. more Southerly. Hence the Right Ascension of the Comet was 49 Deg. 38 Min. 0 Sec. and its Declension 6 Deg. 48 Min. 30 Sec.

March 12. 8 Ho. 25 Min. the Comet preceded μ *Tauri* 2 Deg. 5 Min. 50 Sec. in Right Ascension, and was 4 Min. 25 Sec. more Northerly than the Star. Hence the Comet's Right Ascension was 58 Deg. 12 Min. 40 Sec. and its Declination 8 Deg. 16 Min. 50 Sec. North.

March 14. 9 Ho. 0 Min. the Comet followed the 47th Star of Taurus in the British Catalogue 12 Min. 50 Sec. in Right Ascension, and was 0 Min. 15 Sec. more Northerly than the Star. Hence the Comet's Right Ascension was 60 Deg. 8 Min. 5 Sec. and its Declination 8 Deg. 34 Min. 5 Sec. North. This, and all the following Observations, were made with a good 15 Foot Telescope, the Comet now appearing too faint to be well observed with the 7 Foot Tube.

March 17. 8 Ho. 40 Min. the Comet followed γ *Tauri* 25 Min. 5 Sec. in Right Ascension, and was 9 Min. 40 Sec. more Northerly. Hence its Right Ascension was 62 Deg. 47 Min. 55 Sec. and its Declination 8 Deg. 58 Min. 45 Sec. North.

March 19. 7 Ho. 50 Min. the Comet followed the same Star 2 Deg. 4 Min. 50 Sec. in Right Ascension, being 23 Min. 55 Sec. more Northerly. Hence its
Right

Right Ascension was 64 Deg. 27 Min. 40 Sec. and Declination 9 Deg. 13 Min. 0 Sec. North.

The same Night, at 9 Ho. 0 Min. the Comet preceded *d Tauri* 47 Min. 40 Sec. in Right Ascension, and was 22 Min. 50 Sec. more Southerly. Hence its Right Ascension was 64 Deg. 30 Min. 20 Sec. and Declination 9 Deg. 12 Min. 35 Sec. North.

March 20. 8 Ho. 5 Min. the Comet preceded *d Tauri* 0 Min. 30 Sec. in Right Ascension, and was 16 Min. 35 Sec. more Southerly than the Star. Hence its Right Ascension was 65 Deg. 17 Min. 30 Sec. and Declination 9 Deg. 18 Min. 50 Sec. North.

March 22. 8 Ho. 15 Min. the Comet followed the same Star 1 Deg. 36 Min. 10 Sec. in Right Ascension, and was 3 Min. 50 Sec. more Southerly. Hence its Right Ascension was 66 Deg. 54 Min. 10 Sec. and Declination 9 Deg. 31 Min. 35 Sec. North.

This was the last Night that I saw the Comet; for the Moon being then in her Increase, intirely obstructed its further Appearance. The Light of the Comet was indeed (even in the Moon's Absence) so very weak, that I found it difficult, in some of the latter Observations, to take its Place with any tolerable Certainty; which is, in part, the Cause of some little Disagreement observable in the Comet's Places taken from the same Stars on different Nights; though there are likewise other Irregularities that occur in this Series of Observations, which seem to arise from small Errors in the assumed Places of the Fixt Stars.

Supposing the Trajectory described by this Comet to be nearly *Parabolical*, conformable to what Sir *Isaac Newton* has delivered in the third Book of his *Princip. Math.* I collect from the foregoing Obser-

vations, that the Motion of this Comet in its own Orbit was *Direct*, and that it was in its *Perihelion*, *January* 19. 8 H. 20 Min. *Temp.* *Æquat. Lond.* That the Inclination of the Plane of the Trajectory to the *Ecliptick* was 18 Deg. 20 Min. 45 Sec. The Place of the Descending Node 8 16 Deg. 22 Min. The Place of the *Perihelion* \approx 25 Deg. 55 Min. The Distance of the *Perihelion* from the Descending Node 80 Deg. 27 Min. The Logarithm of the *Perihelion Distance* from the Sun 9.347960. The Logarithm of the Diurnal Motion 0.938188.

From these Elements (by the Help of Dr. *Halley's* general Table for Comets, to which they are adapted) I computed the Places in the following Table ; which also contains the Longitudes and Latitudes of the Comet, calculated from the observed Right Ascensions and Declinations above-mentioned, together with the Differences between the observed and computed Places.

Oxon. 1737. Temp. <i>Æquat.</i>	Com. Longit. Observat.	Lat. Auf. Observat.	Com. Longit. Computat.	Lat. Auf. Computat.	Diff. Long.	Diff. Lat.
Day H.M.	D. M. S.	D. M. S.	D. M. S.	D. M. S.	S.	S.
Febr. 15 7 32	✓ 22 45 7	7 53 27	✓ 22 45 00	7 53 1	+	+
17 7 33	26 30 30	8 27 21	26 30 44	8 28 6	+	+
18 7 14	28 18 14	8 44 20	28 17 46	8 43 57	+	+
21 7 25	✓ 3 26 34	9 26 50	3 26 53	9 25 46	+	+
22 7 45	5 4 53	9 40 00	5 5 28	9 39 27	+	+
25 7 45	9 42 18	10 12 21	9 41 19	10 12 22	+	+
27 8 45	12 36 43	10 31 42	12 36 16	10 31 13	+	+
Mar. 4 8 00	19 3 00	11 6 46	19 3 5	11 7 8	+	+
12 8 25	27 49 58	11 43 3	27 49 53	11 43 19	+	+
14 9 00	29 47 42	11 49 59	29 47 19	11 49 26	+	+
17 8 40	✓ 2 30 57	11 56 31	✓ 2 30 50	11 56 49	+	+
19 7 50	4 12 36	12 00 19	4 12 45	12 00 47	+	+
20 8 5	4 15 11	12 1 12	4 15 13	12 00 52	+	+
22 8 15	5 3 10	12 3 5	5 3 32	12 2 33	+	+
	6 41 30	12 6 15	6 41 19	12 5 42	+	+

From the small Differences between the Comet's observed and computed Places, exhibited in the two last Columns of this Table, we may reasonably conclude, that the Orbit, as above determined, cannot differ much from the Truth, and must therefore be near enough to enable future Astronomers to distinguish

guish this Comet upon another Return, and thereby to settle its Period; which I cannot at present pretend to do, not having met with an Account of any former Comet that seems likely to have been the same with this, whereof a Description has been given particular enough to determine this Point.

2. *Cometes Romæ ex Monte Aventino observatus mense Februario 1737, à Didaco de Revillas Abb. Hieronym. R. S. S.*

Circa horam septimam P. M. diei 16 nobis primum in occidentali cœli parte Cometes apparuit, octo vel novem gradibus Venere inferior; atque ab ejus verticali circulo aliquantulum Meridiem versus declinans. Nudo oculo nonnisi albicantem, et crepera luce fulgentem Lineolam conspiciamus: egregio tamen Campani Telescopio Ped. 6. præter Caudam, quæ in partem à sole averfam protendebatur, & lineolæ speciem extra telescopium præ se ferebat. Nucleum quoque etsi tenui Athmosphæra circumundique obtenebratum intuebamur. Quum nullus circuli quadrans tunc præsto esset; & viciniorum fixarum conspectum nedum nebula interciperet; verum & crepusculum subtraheret, Cometæ locus apparens ea nocte definiri minime potuit.

A die 16 ad 19, sicuti & post 25, plura alia occurrerant impedimenta, quæ observationibus vacare prohibebant. Noctibus porro inter 19 & 26 mediis haud aliter apparentem Cometæ locum accurate determinare licebat, quam Phænomenon cum Venere comparando: propterea quod parvo duntaxat Quadrante utemur,

mur, cujus tubus opticus pedem Anglicum vix æquabat. Ex verticalibus itaque cum Cometæ, tum Veneris altitudinibus eodem tempore observatis, verticales utriusque differentias collegimus, quas hic damus.

Die.	P. M.	Differ.	Vert.	Cometæ Cauda dic 22. Verticale Micrometri filum pertransiens horarium minutum cum Sec. 7. impendebat. Micrometrum autem laudato Campani Telescopio applicitum erat.
	H. M.		• M.	
20	7 59	Gr. 5	22	
22	7 00	Gr. 3	56	
23	7 20	Gr. 3	13	
24	6 15	Gr. 2	30	
25	7 30	Gr. 1	47	
<hr/>				
Die 24.	8	3	Venus, & Cometa apparebant sub Angulo	
			Gr. 7 35	
Die 25.	7	50	Apparebant sub Angulo	
			Gr. 8 5	

3. *Observations upon the Comet seen in January and February 1736-7. and of an Eclipse of the Sun, Feb. 18. 1736-7. made at Philadelphia in Pennsylvania, inclosed in a Letter from Dr. Kearsly to Mr. Peter Collinson, F. R. S.*

ON the 27th of *January* last, about Six in the Evening, I saw a dull Star about 3 or 4 Degrees above *Mercury*, and a little to the Southward of a Vertical passing through γ , but took little Notice of it then, not thinking of a Comet; but by comparing γ 's Place with the Fixt Stars, I afterwards thought it might be a Comet — On the 31st, about 6 Ho. 30 Min. P. M. I took its Distance from *Venus*, by a reflecting Instrument of Mr. *Hadley's* Make, 14 Deg.

40 Min. but by a Forestaff, 14 Deg. 50 Min. and a Right Line pass'd over the Comet, *Venus*, and the *Pleiades*. The Night following, about 6 Ho. 20 Min. its Distance from *Venus* was, by Mr. *Hadley's* Instrument, 13 Deg. 25 Min. The rest of my Observations, by such Instruments as I had, being none of the best, and the Comet's growing very dull, are as follows :

Deg. Ho. Min. P. M.

Feb. 7. 6 47 Comet from *Venus* 7 Deg.
40 Min.

7 3 ———— from *Aldebaran* 59
Deg. 40 Min.

———— from *Algenib* 17
Deg. 45 Min. by a Fore-
staff.

A Right Line from the Co-
met over *Venus* pass'd over
the bright Star in the Side
of *Perseus*.

11. 7 14 Comet from *Venus* 7 Deg.
12 Min.

7 20 A Right Line over the Co-
met, *Venus*, and Head of
Cassiopeia.

17 7 20 The Comet was in a Right
Line, and to the North-
ward of two Stars; Di-
stance of the Stars I sup-
posed to be about 40 Mi-
nutes, and the Comet from
the least 30 Min. These
Stars, I think, were the
South

			South Node of <i>Pisces</i> , brightest from <i>Venus</i> 10 Deg. 20 Min. from <i>Alde-</i> <i>baran</i> 50 Deg. 30 Min. as I found it set down, but must be very false.
D.			No Star within Sight of the
20.	Ho.	M.	Comet by the Telescope.
	30	7	Comet from <i>Aldebaran</i> 34 Deg. from <i>Lucida Cap.</i> 7 19 $\frac{1}{2}$.
21.	about 30	8	Wanted about a Degree of <i>Oculus Ceti</i> .— Which was the last Sight I had of it.

P. S. The Eclipse *Feb.* 18. could not be well observed here, by reason of Clouds. I rectified my Clock by one of *Heath's* large Ring Dials. At 7 Ho. 18 Min. there was a small Dent in the Sun's Edge, whence the Beginning 1 or 2 Minutes sooner: Just before the End, *viz.* 10 Ho. 11 or 12 Minutes, I had a Sight of the Sun again, and there was then a Dent in the Sun's Edge, so that the End must be 10 Ho. 13 or 14 Min. in the Morning: About the Middle of the Eclipse, there was a large Spot near the Middle of the enlightened Part, which was the North Side of the Sun.

4. *Part of a Letter from Rose Fuller, M. D. F. R. S. to the President ; mentioning a Comet seen in Jamaica, in January 1736-7.*

Spanish-Town, Mar. 1. 1736-7.

WE have nothing new here to write you of, but the Appearance of a Comet, which was first perceived about the 26th of *January*, but must, by its Plainness then, have been visible for some time before. It was in the West first of all, some Degrees below and directly under *Venus* : Every Night it appear'd nearer to that Star, but inclined Northerly. In about a Fortnight, it was parallel to it, and in a Week after, was no more to be seen.

I am, &c.

Rose Fuller.

5. *Extract of a Letter from Mr. Sartorius, a Missionary at Madras, dated Feb. 9. 1736-7. V. S. to Mr. Bayer at Petersburg ; concerning the Comet. Translated from the German by C. M. R. S. Sec.*

FOR seven Days last past, about 7 Hours *Vesperè* there hath appear'd a dim Comet, as we took it to be : It is seen in the West, under *Venus* towards the S. W. It looks through a Tube of 10 or 11 Feet long, like a dim or pale Planet ; its Tail tends upwards. What do the Astronomers in *Europe* say of it, if it hath been seen there.

6. *An*

6. *An Observation of the Comet seen at Lisbon, by G. R. Vanbrugh, Esq; on board the Burford Man of War. Communicated to the Royal Society, by John Hadley, Esq; V. Pres. R. S.*

Lisbon, Jan. 29, 1736-7.

AT 6 Hours 49 Minutes, P. M. we saw a Comet with a long brush Tail, at which time its Altitude was found 5 Degrees 15 Minutes, its Distance from *Venus* 18 Degrees 5 Minutes; and *Venus's* Altitude was observed 20 Degrees 40 Minutes. It bore due West.

G. R. Vanbrugh.

[*Note by John Machin, R. S. Secr.*]

“ The Place of the Comet, according to this Observation;
 “ ought to be on *Jan. 29.* 7 Hours 39 Minutes, Eq. Time at
 “ *Lond.* P. M. (☿. 13 Degrees 38 Minutes) Latitude 3 Degrees,
 “ 59 Minutes, 40 Seconds, Bor. The Comet of 1556 moves the
 “ same way, hath its Nodes nearly in the same Place, and with nearly
 “ the same Inclination to the Ecliptic.”